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Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Johansen, M., Nielsen, M., Dahl, J., Svensmark, B., Bækbo, P., Ståhl, M., Hjulsager, C. K., & Angen, Ø. (2012). *Effects of Lawsonia intracellularis on Average Daily Gain in finisher pigs*. Poster session presented at 22nd International Pig Veterinary Society Congress, Jeju, Korea, Republic of.

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Effects of *Lawsonia intracellularis* on Average Daily Gain in finisher pigs

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Introduction

Lawsonia intracellularis (LI) is the causative agent of porcine proliferative enteropathy¹, a disease that is found with high prevalence in all countries with industrial pig production. The infection is known to cause disease in different age groups. In pigs between 6 to 20 weeks of age the endemic form called Porcine Intestinal Andenomatosis (PIA) is predominant. The clinical signs are diarrhoea, ill-thriftiness and wasting. The objective of this study was to estimate the impact of LI detected in faeces on Average Daily Gain (ADG) in grower-finisher pigs..

Material and Methods

A total of 178 approximately 12 weeks old pigs, were included in the study starting the first week after entry to the grower-finisher barn in three herds. In each herd, approximately 60 pigs from four pens were individually ear tagged. The pigs were weighed at the beginning of the study and at the end of the 6-8 weeks observation period. No routine flock medication or antimicrobial feed additives was used in the observation period. Fecal samples from each pig were collected in weeks 0, 2, 4 and 6 (8) during the observation period. At the end of the observation period, five slow growing pigs and five fast growing pigs in each herd were selected for laboratory examination. The selected pigs were examined for LI quantity in feces³. On the sampling day where the median of LI load peaked in the five fast and five slow growing pigs in each herd all fecal samples were tested for LI load and dry matter contents in feces. Faecal dry matter content was determined by drying to constant weight using a microwave oven as previously described². A dry matter contents <18% was defined as diarrhoea. LI load in feces was tested for association with growth rate as categorical variables with three levels. The statistical analysis was performed using a linear mixed model with ADG as a continuous outcome variable. LI excretion levels, diarrhoea status, start weight, and herds were included as independent variables (fixed effects).

Results

A total of 26 pigs were excluded due to data missing, or treatments for other causes. The remaining 152 pigs were Included in the analysis of LI load as categorical variable.

Due to significant interaction between LI load in faeces and diarrhoea separate analyses for pigs with and without diarrhoea was performed. The analysis of pigs with normal faeces showed that start weight and herd were both highly associated with ADG (P<0.0001), but not the LI load in faeces (P=0.69). The analysis of pigs with diarrhoea showed that LI load in faeces (P=0.0005) and herd (P=0.0003) were significantly associated with ADG, but not with the start weight. The results for LI load are shown in Table 1.

Table 1. Results of estimated impact of LI load on ADG as LS Means				
LI load/ g feces	No pigs	Diarrhoea	ADG, g/day	95% CI
≤ 10 ⁵	58	No	864 ^a	824-904
10 ⁵ - 10 ⁷	40	No	858 ^a	814-902
> 10 ⁷	3	No	793 ^a	632-953
≤ 10 ⁵	16	Yes	872 ^a	821-924
10 ⁵ - 10 ⁷	22	Yes	807 ^a	738-875
> 10 ⁷	13	Yes	483 ^b	311-655

^{ab} different letter P<0.05

Discussion

This study clearly indicates that high levels of LI excretion have a negative impact on ADG in pigs with diarrhea. Pig s without diarrhea and LI load> 10⁷/g feces have a numerically lower ADG than the other pigs without diarrhea but with only 3 pigs in the category, a significant result could not be expected.

References

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Acknowledgments

The study is sponsored by Ministry of Food, Agriculture and Fisheries. The Danish AgriFish Agency grant no. 3412-08-02226-03 and Pig Levy Fund grant no. VSP 09/10/75.4